Original Article

The Association between Sociodemographic Characteristics, Creativity and Occupational Stress among Nurses Working in Ilam Hospitals, Iran (2019)

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Article Info

Abstract

Background: Nursing occupation can be stressful, with various practical factors, and nurse creativity plays a significant role in clinical nursing success. This study aims to determine nurses' association of socio-demographic characteristics and creativity with occupational stress.

Materials and Methods: This descriptive study was conducted on 200 nurses working in teaching hospitals in Ilam, Iran in 2019. Sampling was performed by the simple random method. Data collection tools included socio-demographic, job stress, and Abedi creativity questionnaire (CT). Data analysis was performed using SPSS software v.21. One-way ANOVA and independent t-test were used to compare the mean occupational stress scores among different sociodemographic groups. The Pearson correlation test investigated the associations between occupational stress and creativity, and a general linear model was used to determine a correlation between occupational stress and soci-demographic characteristics.

Results: About 73% of nurses had low and 25% had no occupational stress (score: >3.5), There was correlation between occupational stress and creativity (p<0.001, r= 0.25) and sub-domains: fluidity (p <0.001, r= 0.26), innovation (p= 0.003, r= 0.20), and flexibility (r = 0.25, p <0.001). There was significant correlation between occupational stress and socio-demographic characteristics, including education status, work experience, number of night shifts per month, and satisfaction with hospital employment.

Conclusion: we concluded that health managers should help with spoting creativity to solve health system problems by providing a stress-free environment.

Keywords: Nurse, Occupational Stress, Creativity

Introduction

Nowadays, occupational stress in working environments is inevitable; it happens when demand and workload are not consistent with knowledge and ability, challenging the person to cope [1]. Heavy workload, working hours' inflexibility, and role ambiguity are occupational stressors [2]. Occupational stress increases when

the staff feels less supported by their employers and does not control job processes [1].

Nurses are one of the most prominent groups of health care providers [3], being exposed to a variety of occupational risks, musculoskeletal disorders [4], infectious diseases [5, 6], and occupational stress [7]. In investigations of 115 hospitals in 13 provinces in Iran, 78.4% of nurses reported their job stressful, with stress levels between moderate and high [8]. Also, a meta-analysis study in Iran revealed a 69% occupational stress prevalence [9].

Research has indicated a relationship between occupational stress and individual differences and occupational conditions, such as night shift [7, 10], role insufficiency, responsibility, social support, nurse-patient relationship, chronic disease [7], female gender, being married, educational level, work hours, working in teaching hospitals [8], job satisfaction [11], duration of work experience [12]. Occupational stress leads to physical and mental pressure and negatively affects a person's function [2]. It can also affect the staff's creativity, which has been less noticed [13], while creativity is a critical factor in nursing [14].

Creativity is a mental activity that refers to the ability to begin something new or to create something that did not previously exist [15]. To describe creativity, four factors are used: fluidity (talent for producing various ideas), expansion (talent for attention to detail), innovation (talent for creating new and unusual ideas), and flexibility (talent for creating ideas or very diverse methods) [16]. In clinical nursing, it can include three attributes, Clinical nursing can include three attributes: reconstructing old ideas or choosing a new way of providing patient care, selecting simple, efficient, and safe ideas, examining the relationship between ideas, and successful decision-making [17]. Clinical staff faces different and unexpected conditions at work and thus have to use creativity to make good decisions [18].

Innate interest in nursing, officials' support and encouragement, motivation to progress, sympathy towards patients, and religious beliefs encourage nurses to use creativity in clinical environments [14]. This leads to patients' satisfaction and better treatment results. Furthermore, creativity results in mental health, higher self-esteem, feeling proud, and personal life improvement [18]. Occupational stress [13], officials' nonsupport, and low financial funds are obstacles to creativity [18]. Current knowledge about the effect of different stressors on creativity in a job is limited and not completely understood [13]. Less stress increases creativity [19]; however, there are different results about the effect of occupational stress on creativity. Employees with lower emotional level perceive higher stress and less stress lead to a lower level of creativity [20]. Also, a positive relationship has been reported between challenging stressors and creativity [21]; however, more investigations should be done about the effects of stressors on creativity [19].

Nurses have an essential role in health promotion, close contact with patients, and share their strong or weak points with patients [3]. This emphasizes the importance of their mental health promotion and stress reduction. Depending on the differences in work environment and culture, individual factors may affect occupational stress differently. Therefore, it is necessary to examine the impact of individual factors on occupational stress in different cultural settings. Also, occupational stress negatively affects creativity, while creativity is a critical factor for success in clinical nursing. Based on a literature review, the effect of various stressing conditions on creativity is complicated and needs more investigation.

Further, any survey on the effect of different stressors on creativity in clinical settings has not been developed, and there are few studies on creativity and occupational stress in clinical settings. Additionally, individual factors may affect occupational stress differently in different cultural settings. Therefore, the current study aimed to investigate the association between socio-demographic characteristics, creativity and occupational stress in nurses working in Ilam hospitals.

Materials and Methods

This research was part of a project evaluating nurses and midwives' occupational stress, mental health, and creativity in Ilam-Iran hospital. The present work was a descriptive study performed on 200 nurses working in teaching hospitals of Ilam-Iran from October to December 2019, applying simple random sampling method. The total number of nurses working in the hospitals of Ilam-Iran was 600.

Inclusion criteria were at least six months from the start of work and before retirement. Exclusion criteria also included the occurrence of an unfortunate event during the last 6 months (death of a first-degree family member), history of chronic diseases, mental illness, use of sleeping pills and sedatives (according to the individual statement), and employment for a second job.

Using G-Power software and considering the relationship between occupational stress and creativity in nurses (r= -0.361) in Hajloo et al. [22],

with 95% power (β -1), 0.01 error (Alpha), 95% confidence interval, and based on a two-tailed test, a sample volume of 128 was calculated, which with regards to a 20% attrition was 154 in the end. Two hundred thirty questionnaires were distributed, of which 200 were completed. The survey was conducted on 200 nurses working at educational university hospitals in Ilam.

After approval and receiving permission from the ethics committee of Ilam University of Medical Sciences (Ethics code: IR.MEDILAM.1398.081), the researcher, getting the required permission from the hospitals' matron, collected the names and phone numbers of nurses working at Imam Khomeini and Shahid Mostafa Khomeini hospitals. Selecting adequate samples for every hospital was defined relatively concerning the main sample volume. Sampling was done by the simple random method based on the sample size intended for each hospital. The researcher contacted selected samples, and after giving a short description of the survey's goals and confidentiality of information, the nurse was assessed by eligible criteria. If they met the criteria and were willing to participate, they showed up in the department on schedule and received the questionnaire. Informed consent was taken from all participants.

Data collection tools included socio-demographic, job stress, and Abedi creativity questionnaire completed by the self-report method. The researcher developed the socio-demographic questionnaire. It included questions about age, education level, marital status, work experience, number of night shifts per month, satisfaction with hospital work, and satisfaction with the shift arrangement.

Occupational stress was assessed using the Health and Safety Executive (HSE) Questionnaire (Job Stress Questionnaire). The standard job stress questionnaire is related to the UK Health and Safety Executive (HSE-2004), including 35 questions with 7 subscales of role, communication between colleagues, support of officials, support of colleagues, control, demand, and change. Questions 1, 4, 11, 13, and 17 are related to the role, questions 5, 14, 21, and 34 are related to the subscale of communication between colleagues, questions 8, 23, 29, 33, and 35 are related to the support of officials, questions 7, 24, 27 and 31 related to the support of colleagues, questions 2, 10, 15, 25, 19 and 30 are related to the control, questions 3, 6, 9, 12, 16, 18, 20 and 22 are related to the demand, and questions 32, 28 and 6 are related to the change. The questionnaire has a 5-point Likert scale (never, rarely, sometimes, often, always), each of which is scored from 1 to 5. It should be noted that questions 3, 5, 6, 9, 12, 14,

16, 18, 20, 21, 22, and 34 are scored in reverse, and the option always scores 1, and the option never scores 5. The scores in each questionnaire area are expressed only by the mean (standard deviation) and quantitative data. In order to calculate the mean, first, the mean of the questions in each area is calculated, and then the calculated number is divided by the number of questions in each area. Overall, a high score indicates less occupational stress in each subscale and the whole questionnaire. On the other hand, considering the mean scores, the frequency (percentage) of stress in each subscale and the overall scale can be expressed in four categories. A mean score lower than 1.5 shows high stress, a score of 1.5 to 2.5 indicates moderate stress, a score of 2.5 to 3.5 shows low stress, and a score higher than 3.5 indicates stressless [23]. The reliability of this questionnaire for the English version by calculating Cronbach's alpha coefficient (internal consistency) was 89% to 78% [23]. Moreover, its reliability in Iran has been calculated by Cronbach's alpha coefficient as 0.78 [24]. Its reliability by calculating Cronbach's alpha coefficient in the present study was 0.73.

The creativity assessment questionnaire is based on Torrance's theory of creativity developed by Abedi as the Creativity Test (CT) in Tehran in 1982. The test has 60 three-choice questions, consisting of four subscales, fluidity, expansion, innovation, and flexibility. Questions 1 to 22 are for fluidity, 23 to 33 for expansion, 34 to 49 for innovation, and 50 to 60 for flexibility. The options indicate low, medium, and high creativity, with a score of 1 for low creativity, 2 for moderate creativity, and 3 for high creativity. The sum of the scores obtained in each subscale represents the subject score in that section, and the sum of the subject scores in the four subscales shows the overall score. The score range in the fluidity category is from 22 to 66, the expansion category from 11 to 33, the innovation category from 16 to 48, and the flexibility category from 11 to 33. The overall creativity score range is between 60 and 180, and a person who scores higher is more creative [25]. The reliability of the English version of this questionnaire by calculating Cronbach's alpha coefficient was 66% [25]. Daemi and Moqimi in Iran reported its reliability by Cronbach's alpha coefficient for fluidity as 0.67, innovation as 0.55, flexibility as 0.84, and expansion as 0.48 [16]. Further, its reliability by calculating Cronbach's coefficient in the present study was 0.78.

Content validation was used to determine the validity of tools. The questionnaires were given to ten faculty members of medical universities, and according to their opinions, the necessary

corrections were made to the questionnaires. Also, in this study, face validity was determined on ten nurses working in hospitals in Ilam. Content Validity Ratio (CVR) was used to examine quantitative validity. In the present study, CVR was 0.99 for the HSE questionnaire and 78% for CT.

Data analysis was performed with SPSS software version 21. Normality of quantitative data was investigated with Skewness and Kurtosis. Also, the Pearson correlation test investigated the relationships between occupational stress and creativity. One-way ANOVA and independent t-test were used to compare the mean occupational stress in different socio-demographic groups. The assumptions of one-way ANOVA [homoscedasticity of dependent variable (Levene statistic with P>0.05 was for all socio-demographic factors), dependent variable (occupational stress) is normally distributed within each group, and each observation in the sample is independent of all other] and t-test [quantity variable and the normal distribution of dependent variable (occupational stress), qualitative variable with binary status (yes/no), and independence of independent variables (gender, satisfaction with the shift arrangement, hospital employment)] were assessed. First, the variables of age, education level, marital status, work experience, number of night shifts per month, satisfaction with the shift arrangement, satisfaction with hospital employment, and overall creativity score entered the unadjusted general linear model test alone. The variables with p <0.05 were entered into the adjusted general linear model test.

Results

The mean (standard deviation) age of nurses was 30.3 (6.8), and the education level mainly was bachelor's (91.5%). About half of the nurses (51%) were married, and more than half of them (62%) had ≤ 5 years of work experience. Most nurses were satisfied with the shift arrangement (67.4%) and hospital employment (60%). The majority participating in the study (81.5%) were female (Table1).

Table 1. Socio-demographic characteristics of nurses (n=200)

Characteristics		Number (%)*
Age (years)	22-29	110 (55.0)
	30-39	69 (34.5)
	≥ 40	21 (10.5)
	Mean (SD) †	30.3 (6.8)
Educational level	Associate	4 (2.0)
	Bachelor	183 (91.5)
	Master and higher	13 (6.5)
Marital status	Single	96 (48.0)
	Married	102 (51.0)
	divorce	2 (1.0)
Work experience (Years)	≤ 5	125 (62.0)
	6-10	33 (16.5)
	≥11	42 (21.0)
Number of night shifts (Month)	≤4	36 (18.0)
	5-9	139 (69.5)
	≥10	25 (12.5)
Satisfaction with the shift arrangement	**Yes**	135 (67.4)
	No	65 (35.3)
Satisfaction with the hospital employment	**Yes**	120 (60.0)
	No	80 (40.0)
Gender	Male	37 (18.5)
	Female	163 (81.5)

*All data indicate the number (percent) unless specified.
†Standard deviation

The mean (SD) of the overall job stress score was 3.2 (0.4) out of 1-5; about 73% of nurses had low occupational stress (score: 2.5-3.5), and 25% had no occupational stress (score: >3.5). Also, none of the nurses had high stress (score: <1.5). The lowest stress was in the demand subscale (56%), followed by the changes subscale (55%) and the support of officials subscale (54.5%); the most stressless group was in the role subscale (84.5%) (Table 2).

The median and interquartile range of mental health, noise annoyance, and equivalent sound level are presented in Table 3.

Table 2. Stress and its subscale in nurses (n=200)

Job stress (1 to 5)*	Mean (SD)†	Lack of stress	Low stress	Moderate stress	High stress
		Number (%)			
Role	4.7 (0.1)	169 (84.5)	23 (11.5)	7 (3.5)	1 (0.05)
Communication between colleague	3.1 (0.9)	58 (29.0)	76 (38.0)	60 (30.0)	6 (3.0)
Support of officials	3.1 (0.7)	56 (28.0)	109 (54.5)	31 (15.5)	4 (2.0)
Support of colleague	3.3 (0.8)	63 (31.5)	96 (48.0)	39 (19.5)	2 (0.1)
Control	3.3 (0.7)	76 (38.0)	85 (42.5)	38 (19.0)	1 (0.05)
Demand	2.8 (0.7)	23 (11.5)	112 (56.0)	59 (29.5)	6 (3.0)
Changes	3.1 (0.7)	54 (27.0)	110 (55.0)	32 (16.0)	4 (2.0)
Overall job stress score	3.2 (0.4)	50 (25.0)	147 (73.5)	3 (1.5)	---

*A higher score indicates less stress.
†Standard deviation

The mean, standard deviation of the overall creativity score was 130.8 (17.0) out of 60-180, and the most creativity was in the fluidity subscale (49.4 (6.5)), followed by innovation (34.4 (5.8)) and flexibility (24.8 (3.9)). Also, the least creativity was in the expansion subscale (22.0 (4.1)) (Table 3).

Occupational stress had a positive relationship with creativity (p <0.001, r = 0.25), fluidity (p < 0.001, r = 0.26), innovation (p = 0.003, r = 0.20), and flexibility (r = 0.25, p <0.001). Also, occupational stress was not associated with expansion (r = 0.09, p =0.197) (Table 3).

Table 3. The overall score of creativity and its subscale, as well as their relationship with occupational stress in nurses

Creativity	Mean (SD)*	r†	P value‡
Fluidity (22 to 66)	49.4 (6.5)	0.26	<0.001
Expand (11 to 33)	22.1 (4.1)	0.09	0.197
Innovation (11 to 33)	34.4 (5.8)	0.20	0.003
Flexibility (11 to 33)	24.8 (3.9)	0.25	<0.001
Overall creativity score (60 to 180)	130.8 (17.0)	0.25	<0.001

*A higher score indicates high creativity.
†Correlation coefficient
‡Pearson test

Based on the one-way ANOVA, there was a significant age difference (P=0.027), educational level (P=0.048), work experience (P=0.016), and the number of night shifts (P=0.045) in job stress. Moreover, according to the independent t-test, a significant difference was observed in satisfaction with shift arrangement (P<0.001) and hospital employment (P<0.001) in occupational stress. Lower education level (B=0.5, CI 95%= 0.1 to 0.7, p= 0.010), 5 years or less work experience (B=-0.2, CI 95%=- 0.1 to -0.4, p= 0.034), more night

shifts in a month (B=0.2, CI 95%= 0.04 to 0.1, p= 0.003), the satisfaction with working in a hospital (B=0.1, CI 95%= 0.2 to 0.1, p= 0.016), and lower creativity (B=0.006, CI 95%= 0.003 to 0.009, p<0.001) were correlated with occupational stress (Table 4).

Spearman correlation test was used to investigate the association of equivalent sound level and noise annoyance with mental health components (Table 4).

Table 4. Multivariate general linear model analysis of the factors associated with overall occupational stress (n=200)

Variable		Unadjusted		Adjusted	
		B (95% CI)*	P value	B (95% CI)*	P value
Age (reference: Age ≥ 40)	22-29	−0.2 (-0.4 to -0.1)	0.007	−0.2 (-0.3 to 0.2)	0.892
	30-39	−0.2 (-0.03 to -0.4)	0.002	−0.1 (-0.3 to 0.1)	0.175
Educational level (reference: Master)	Associate	0.6 (0.1 to 1.0)	0.014	0.5 (0.1 to 0.7)	0.010
	Bachelor	0.1 (-0.1 to 0.3)	0.246	0.2 (-0.1 to 0.3)	0.134
Marital status (reference: Single)	Married	−0.4 (-0.9 to 0.2)	0.179	--	--
	Divorce	−0.2 (-0.8 to 0.3)	0.356	--	--
Work experience (reference: ≥ 11)	≤ 5	−0.2 (-0.3 to -0.1)	0.004	−0.2 (-0.4 to -0.1)	0.034
	6-10	−0.1 (-0.4 to -0.001)	0.049	−0.1 (-0.3 to 0.1)	0.225
Number of night shifts per month (reference: ≥ 10)	≤4	0.2 (0.1 to 0.4)	0.031	0.2 (-0.1 to 0.4)	0.062
	5-9	0.2 (0.1 to 0.4)	0.016	−0.2 (0.1 to 0.4)	0.003

Satisfaction with the shift arrangement (reference: No)	Yes	0.2 (0.1 to 0.3)	<0.001	0.1 (-0.1to 0.2)	0.101
Satisfaction with hospital employment (reference: No)	Yes	0.2 (0.1 to 0.3)	<0.001	0.1 (0.1 to 0.2)	0.016
Overall creativity score		0.006 (0.003 to 0.009)	<0.001	0.006 (0.003 to 0.009)	<0.001

* 95% Confidence interval

Discussion

The study aimed to determine the association of socio-demographic characteristics and creativity with occupational stress in nurses in Ilam-Iran hospitals. The study showed that most nurses had some levels of occupational stress, with about 73% having low stress and 1.5% having moderate stress levels. In this research, occupational stress was related to creativity, fluidity, innovation, flexibility, education level, and work experience. Night shifts and hospital work dissatisfaction also had a relationship with occupational stress.

Moreover, 73% of nurses had low levels of occupational stress, 1.5% had moderate levels; further, no high stress was reported, and 25% of the participants had no occupational stress. Kakemam et al. (2019), using the Occupational Stress Scale on nurses working at 115 third-level hospitals in 13 provinces of Iran, reported that 78.4% of nurses had moderate and high stress [8]. Dagget et al. in Ethiopia (2014) studied 341 nurses with a researcher-made questionnaire. Of the participants, 33% had low levels of occupational stress, 34% had moderate, and 33.7% had severe stress levels [26]. These results are not consistence with the present study. This discrepancy is not unexpected because stress as a psychological problem is influenced by various individual, interpersonal, attitudinal, emotional, and personality factors [27]. According to Dagget et al. (2014), the highest level of occupational-related stress was related to the death of a patient, followed by uncertainty regarding patient treatment and workload; therefore, differences in hospitals and units can affect the level of nursing occupational stress [26]. Also, differences in questionnaires used, the work environment, culture, working conditions such as working hours per week, shift turns, various job titles, physical features of the work environment, personality differences, and mental characteristics are probable reasons for this discrepancy in occupational stress level between these studies and the present research. Furthermore, the current study showed that most nurses had low levels of occupational stress;, one of the low-stress subscales was the support of officials. The low

levels of occupational stress in most nurses can be due to the support of officials and interaction between nurses and officials, resulting in an environment with low stress levels [1].

The current study's mean overall occupational stress score was 3.2, and the most stressless subscale was related to the role. Kakeman et al. (2019) reported a mean overall occupational stress score of 3.4 [8]. Based on the study of Bagheri Hosseinabadi et al. (2018) in 6 hospitals in Babol-Iran using the HSE questionnaire, the overall occupational stress score was 3.6, and the lowest score was in the role subscale. This study's mean scores are inconsistent with the current study [11]. Differences in questionnaires used in various studies and scoring systems can be the possible reasons for the inconsistency in mean scores. Furthermore, these findings suggest that the role subscale is the most influential factor in determining occupational stress. Wu et al. in China (2008) reported that occupational stress was correlated with role boundary, insufficiency, responsibility, and overload [7].

In the current study, the mean overall creativity score was 130.8, the most creativity was in the fluidity subscale, and the lowest was in the expansion subscale. Sadeghi-Gandomani et al. (2015) studied 150 nurses working at the intensive care unit in Tehran using the Abedi creativity test. The mean creativity score was 151.6, the most creativity was in the fluidity subscale, and the lowest was in the expansion subscale [28]. Cheraghi et al. (2021), in a review article, showed that fluidity of mind is one of the critical elements in nurse creativity; fluidity requires the talent for producing various ideas and accepting new ideas for patient care [17]. Malik et al. (2016) studied 405 nurses in India using the employee creativity questionnaire, showing the mean creativity score as 2.1 [29]. Toyama and Mauno (2017) reported a mean creativity score of 7.5 for 489 nurses in Japan, using the New BJSQ questionnaire [30]. A difference in the workplace is the probable reason for the differences in creativity scores between these studies and the current research since working in various workplaces is associated with a different leadership method. Malik et al. (2016) reported authentic leadership positively linked to

employees' creativity. Authentic leaders motivate their employees by enhancing their positive emotions, and employees improve their work by being creative [29]. Maa et al. (2017) reported that none of the creativity testing tools could measure the creativity of employees and clinical students sufficiently due to various definitions available for creativity, thus requiring a specific definition to measure creativity correctly [15].

On the other hand, a multiple-choice test alone cannot be a precise scale for creativity measurement. Creativity depends on multiple factors, including personality, family education, managers' expectations of creativity [16], interest in nursing, mental challenges while facing clinical problems, the motivation to progress, responsibility, and spiritual and religious motivations [14]. Thus, since working in different environments can subject the person to multiple factors that can result in different creativity results, nurses' creativity levels were different in the present study compared to others.

In the current study, occupational stress was related to creativity, fluidity, innovation, and flexibility. Less stress led to more creativity. The effect of stressors on creativity is complicated and depends on what kind and how much a stressor can cause stress. Situations with lower stress increase creativity, and those with higher stress lower creativity [19]. On the other hand, the effect of occupational stress on creativity can be influenced by the cause of occupational stress. For example, the results are contradictory regarding lack of time and occupational stress. Occasionally, occupational stress prevents the emergence of creativity, and sometimes nurses move toward creativity. In other words, time shortages lead to creativity, and severe time shortages prevent creativity [17]. Wang et al. (2020) investigated some factors that play a mediating role between occupational stress and creativity. Role ambiguity is among the role stressors and occupational stress. It is a term used to describe a lack of clear goals and means to do a role. Role ambiguity is correlated with the creativity effect of mediating factors. Job satisfaction mediates the negative relationship between role ambiguity and creativity.

Further, role ambiguity leads to the suppression of a positive attitude in work. Employers who experience higher levels of role ambiguity tend to feel lower levels of job satisfaction. As a result, they are less creative in their work [13]. In an investigation conducted in China by He et al. (2019) on IT companies' employees, a positive association of challenging stressors with innovative behavior and creative efficacy was reported [21]. Nassem (2017), in Pakistan, showed a positive

relationship between occupational stress and the creativity of employees, increasing their creativity [20]. These results are inconsistent with the current study.

In this study, a higher education level was correlated with occupational stress. In the survey by Kakemam et al. (2017), lower education was a risk factor for more stress levels in nurses [8], inconsistent with the current study. In Nabirye et al. (2011), higher education resulted in higher occupational stress [12], consistent with the present research. Nurses with a Master's degree and higher do not have specified responsibilities in hospitals, and they are not aware of the job's goals and the expectations to fulfill, leading to role ambiguity and stressors [2]. Role stress has a strong association with job stress [7].

In the current study, work experience of 5 years or less was correlated with higher stress levels. In Nabirye et al., nurses with more than 20 years of experience had the highest occupational stress levels, while those with five years or fewer experience reported the least stress levels [12], inconsistent with the current study. Heavy workload, inflexible working hours, working on holidays [1], low salary, and discrimination at work are risk factors for occupational stress [8]. These factors are higher in those with less working experience, and they might be subject to more stress levels. On the other hand, those with more working experience have more job security and are not subject to being fired or replaced. They also have more organizational positions and cooperate in professional decision-making, resulting in lower stress levels in more experienced employees.

In the current study, more night shift was correlated with occupational stress. According to Wu et al. in China (2008) [7] and Lin et al. in Taiwan (2014), night shift was predictive of higher occupational stress [10], consistent with this study. Ferri et al. (2015) compared nurses with day and night shifts. Working at night shifts was one of the most common reasons for sleep and biological function disturbances, thus negatively affecting health and body functions and subjecting people to occupational dissatisfaction. Lower occupational satisfaction was related to stress-induced mental and physical symptoms [31], consistent with this study. In addition, Cannizzaro et al. (2020), investigating Italian security guards, reported that night-time shift cortisol levels increased before and after the shift [32]. Further, according to Bardaquim et al. (2020), in Brazil, hospital nursing professionals showed high cortisol levels, suggesting the presence of stress [33].

In the current study, satisfaction with working in a hospital was correlated with low occupational

stress. According to Dagget et al. in Ethiopia (2014) [26] and Bagheri Hosseinabadi et al. (2018) in Iran, higher job satisfaction among nurses decreased occupational stress levels [11]. Occupational stress happens when there are more expectations than a person's abilities at work, leading to more pressure and stress [1]. However, satisfaction with the job and working in a hospital can positively affect the person's attitude towards working conditions, resulting in job satisfaction and lower stress level. Also, the satisfaction with working in a hospital may be reflected by satisfaction with working environment, workload, workplace support, and task clarity. The work hours [8], support of officials and colleagues [1], and role clarity [13] are correlated to occupational stress. As a result, the satisfaction with working in a hospital leads to low occupational stress.

One of the strong points of the current study was choosing nurses from multiple departments; thus, the results can be generalized to all nurses in various departments. This study had another strong point: for the first time, a correlation between socio-demographic characteristics and creativity with occupational stress was investigated among nurses in the cultural environments of Ilam. Due to the study's cross-sectional nature, it was impossible to correctly identify the causation relationship between occupational stress and creativity. This study was performed exclusively in educational university hospitals, and the results may differ from private hospitals. Therefore, a survey in private and educational university hospitals to compare stress levels and creativity is recommended. Moreover, more surveys are suggested due to limited studies about occupational stress's impact on nurses' creativity in clinical settings. One of the limitations of the present study was the lack of homogeneous gender nurses participating in the study; other studies are recommended to perform sensitivity analysis or research with one group of women or men.

Conclusion

The study findings show that nurses are at risk for various levels of occupational stress. This emphasizes developing programs to reduce the stress on nurses. On the other hand, nurses need creativity to fulfill patients' complex needs, but occupational stress decreases creativity. Officials must consider creativity as an inseparable part of clinical strategies and build a stress-free environment where nurses can follow their creative measures. They also should recognize the risk factors of occupational stress and prepare targeted interventions to lower it, thus helping creativity emerge.

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